

Appendix 4-2: Annual Permit Report for the Taylor Creek Stormwater Treatment Area

Permit Report (May 1, 2016–April 30, 2017)
Permit Number: 0194485

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SUMMARY

Based on Florida Department of Environmental Protection (FDEP) permit reporting guidelines, **Table 1** lists key permit-related information associated with this report. **Table 2** lists the attachments included with this report. **Table A-1** in Attachment A lists specific pages, figures, tables, and attachments where project status and annual reporting requirements are addressed. This annual report satisfies the reporting requirements specified in the permit.

Table 1. Key permit-related information.

Project Name:	Taylor Creek Stormwater Treatment Area
Permit Number:	0194485-013
Issue and Expiration Dates: 0194485-013 (permit renewal):	Issued: 8/1/2016; Expires: 8/1/2021
Project Phase:	Operations
Permit Specific Condition Requiring Annual Report:	34
Reporting Period:	May 1, 2016–April 30, 2017
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Table 2. Attachments included with this report.

Attachment	Title
A	Specific Conditions and Cross-References
B	Water Quality Data
C	Hydrologic Data

PROJECT STATUS

In Water Year 2017 (WY2017) (May 1, 2016–April 30, 2017), the Taylor Creek Stormwater Treatment Area (TC-STA) was in routine operations.

CONCLUSIONS REGARDING PROJECT SUCCESS

The project demonstrated a net reduction in total phosphorus (TP) loads and concentrations in WY2017. Please refer to the *STA Performance Evaluation* section of this report for more details.

PROBLEMS ENCOUNTERED

The project encountered operational challenges during the reporting period. These are detailed in the *Operations and Maintenance* section of the report, in the *Operations* sub-section. The stormwater treatment area (STA) continued to show reversals in TP concentrations during periods of decreased flow and lower inflow TP concentrations.

ACTIONS TO ADDRESS PROBLEMS

To afford various biotic and abiotic phosphorus (P) removal mechanisms in the STA sufficient time to operate, hydraulic loading rates were reduced to increase hydraulic retention time within the STA under low flow conditions. Also, the South Florida Water Management District (SFWMD or District) continued investigations into longer-term solutions to effectively control diffusive P flux in the STA and help increase its P treatment efficiency.

INTRODUCTION

PROJECT OVERVIEW

The TC-STA operating permit (0194485-002-GL) was issued to the SFWMD on June 9, 2006, under the authority of the Lake Okeechobee Protection Act (LOPA), Chapter 373.4595, Florida Statutes (F.S.) and Title 62, Florida Administrative Code (F.A.C.). Pursuant to Section 373.4595(7) of the LOPA, the FDEP's authority under Chapters 373 and 403, F.S., LOPA was subsumed by the Northern Everglades and Estuaries Protection Program (NEEPP) in 2007. The permit took effect on May 5, 2011, after the TC-STA was transferred to the District by the United States Army Corps of Engineers (USACE), the federal sponsor of the project.

The TC-STA is one of two pilot-scale STAs being implemented north of Lake Okeechobee as part of the Critical Restoration Projects authorized by the United States Congress through Section 528 of the Water Resources Development Act of 1996. Constructed in April 2006, this two-cell STA has an effective treatment area of 118 acres (**Figure 1**). The TC-STA was designed to remove, on average, 2.0 metric tons (t) of TP from the Taylor Creek drainage basin per year (Goforth 2005 and Stanley Consultants, Inc. 2003).

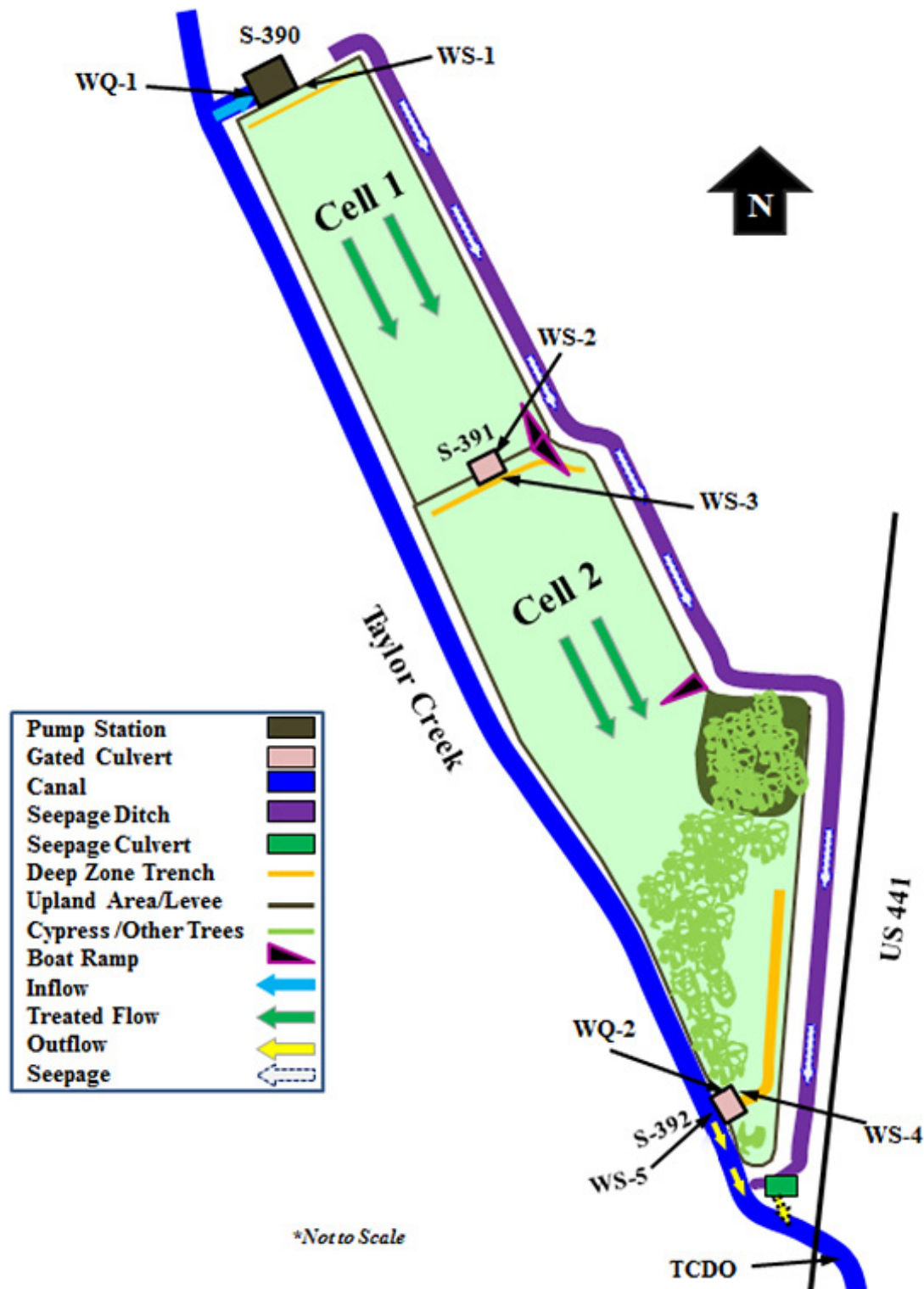


Figure 1. Schematic of TC-STA showing structures, flow, and water quality monitoring stations. (Note: WS - water stage sensor, and WQ - water quality sample station; S-390 and S-392 are the permitted stations; TCDO is Taylor Creek downstream.)

Flow-through operations at the TC-STA commenced on June 26, 2008. By the end of WY2017, the TC-STA had almost 78.5 months of flow-through operation. A detailed breakdown of flow-through operation by water year is provided in the *STA Performance Evaluation* section of this report.

This report summarizes TC-STA monitoring activities performed during WY2017 and provides an evaluation of monitoring data for permit compliance and project performance. The report has been submitted to FDEP in accordance with Specific Condition 34 of the permit.

PERMIT HISTORY

The original LOPA permit and all modifications issued to the District and the USACE are as follows:

- 0194485-001, issued September 15, 2003, is the original permit for the construction and preliminary operations of the TC-STA (USACE).
- 0194485-002, issued June 9, 2006, with an expiration date of June 9, 2011, is the original operation permit for the project (District).
- 0194485-003, issued June 29, 2005, is a minor permit modification for dewatering activities during construction (USACE).
- 0194485-004, issued December 16, 2005, is a minor permit modification to change a water quality monitoring station (USACE).
- 0194485-005, issued April 20, 2007, is a minor permit modification to update water quality monitoring conditions (USACE).
- 0194485-006, issued August 22, 2008, is a minor permit modification to change the expiration date of the permit to September 15, 2009 (USACE).
- 0194485-007, issued June 26, 2009, is a minor permit modification to extend the expiration date of the permit to September 15, 2010 (USACE).
- 0194485-008, issued July 22, 2010, is a permit modification to extend the construction permit date through September 15, 2011 (USACE).
- 0194485-009, issued July 21, 2011, with an expiration date of June 9, 2016, is a five-year renewal of the original operations permit (District).
- 0194485-010, issued October 7, 2011, is a permit modification to discontinue pesticides monitoring (District).
- 0194485-011, issued December 16, 2011, is a permit modification for construction of a recreational boardwalk facility (District).
- 0194485-012, issued July 2, 2015, is a minor permit modification to authorize use of a new procedure for direct analysis of total nitrogen in water samples (District).
- 0194485-013, issued August 1, 2016, with an expiration date of August 1, 2021, is a five-year renewal of the permit (District).

OPERATIONS AND MAINTENANCE

OPERATIONS

During the first two months of WY2017, TC-STA operated mostly at 8.4 cubic feet per second (cfs) to continue providing optimal growth conditions for target vegetation, including the young vegetation planted in previous years. With an increase in basin runoff starting at the beginning of July 2016, there was enough flow in Taylor Creek to operate 2-3 pumps (8.4 – 12.6 cfs) through the first week of October 2016, to capture and treat as much water through the STA as possible. In the second half of October 2016, the STA started to show reversals in weekly TP concentrations. As an adaptive management measure, the pumping rate was reduced to 8.4 cfs by running two pumps through the second week of November 2016. This allowed an increase in hydraulic retention time (HRT) within the STA. From the second week of November 2016 through the second week of March 2017, the pumping rate was reduced to 4.2 cfs to manage declining water quality conditions resulting from decreasing inflow TP concentrations and Taylor Creek flows. From mid-March 2017 to the end of WY2017, no flow into the STA was reported due to the dry conditions in the Northern Everglades, which resulted in the partial dry out of Cell 1. Water depths across the TC-STA during WY2017 were kept within the limits of normal operations described in the water control plan (USACE 2009). Mean stages in Cells 1 and 2 during WY2017 were 24.1 and 23.7 feet (ft) National Geodetic Vertical Datum of 1929 (NGVD29), respectively (**Figure 2**).

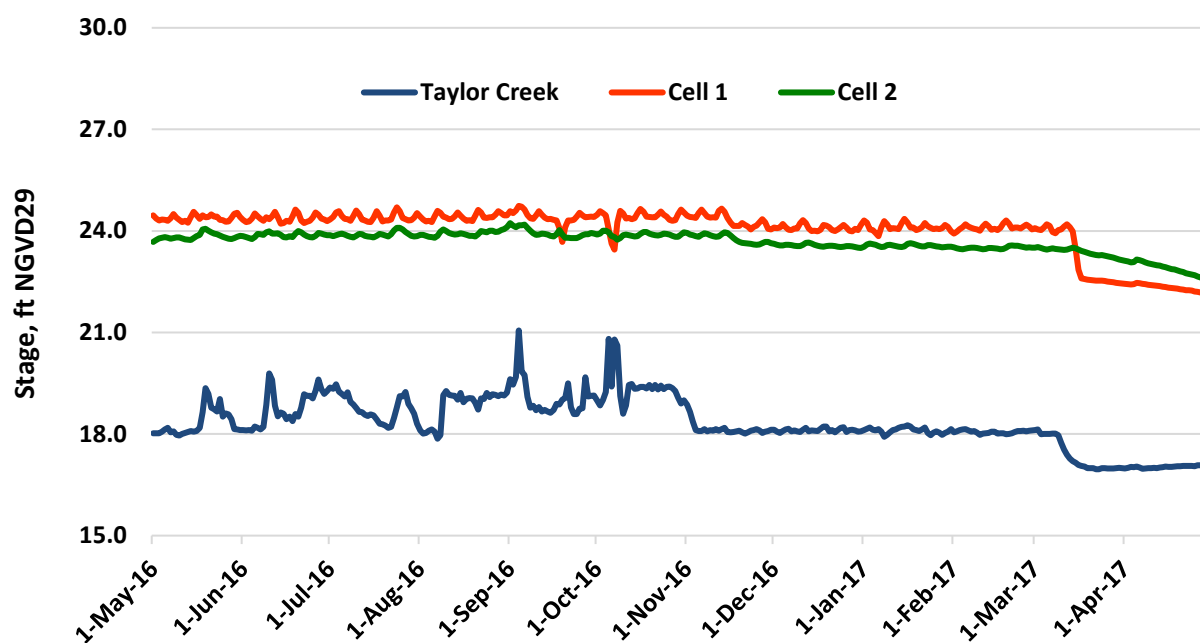


Figure 2. Daily mean stage in Taylor Creek in relation to Cells 1 and 2 of the TC-STA during WY2017.

VEGETATION MANAGEMENT

During WY2017, vegetation management activities for the TC-STA focused on establishing desired plant species and controlling non-desired plant species, including those that can impact cover of desired species for water quality treatment (Toth 2012). There were no additional plantings in WY2017 after the extensive plantings in WY2014 and WY2015. Maintaining optimal water levels is critical for the function and sustainability of the STAs. However, extremely dry conditions in the Northern Everglades during the last two months of WY2017 resulted in a rapid decrease in stages in Taylor Creek, and no available water to keep both cells of TC-STA properly hydrated. There have not been substantial changes in vegetation

cover in WY2017, with the estimates of emergent vegetation cover remaining at 90% for Cell 1 and 80% for Cell 2. Cattail (*Typha* spp.), bulrush (*Schoenoplectus* spp.), and alligator flag (*Thalia geniculata*) dominate the vegetation cover in both cells of the STA. There are also cabbage palms (*Sabal palmetto*) and other understory plants in the cypress (*Taxodium* spp.) dome at the southern portion of Cell 2 near the outflow structure. The significant increase in emergent vegetation (bulrush and alligator flag) cover from multiple plantings in WY2014 and WY2015 in both cells of the STA helped to minimize the hydraulic short circuits on the western levee of Cell 1 and in areas adjacent to the cypress stand in the southern end of Cell 2. In the months following plantings, the stages were reduced to allow cattail seeding and recruiting and to increase survivorship of new bulrush and alligator flag plants. Survivorship was estimated to be around 80% in the first few months after planting. Once the cattail seedlings that were intermingled with the plantings matured, survivorship of the original plantings was difficult to judge.

Plant control efforts in the STA focused on the treatment of water lettuce (*Pistia stratiotes*). Water lettuce is by far the most difficult species to control because it can rapidly form dense mats during summer months. It has the potential to clog the outflow structure and impact existing cover of submerged aquatic vegetation (Toth 2012). During WY2017, the District sprayed 55 acres (22.3 hectares) with 330 ounces (10.3 quarts) of flumioxazin to treat water lettuce infestations mainly in Cell 2. Another 2 acres (0.8 hectares) were treated with 120 ounces (3.8 quarts) of glyphosate and 32 ounces (1 quart) of imazapyr to eradicate alligator weed (*Alternanthera philoxeroides*) in Cell 1. This information is provided in compliance with Specific Condition 34E of permit 0194485-013 and presented in **Table 3**.

Table 3. Herbicide usage for routine control and maintenance of undesirable vegetation within the TC-STA during WY2017.

Spray Date	Herbicide	Application Rate (ounces per acre)	Area Sprayed (acres)	Total Applied ^a (ounces)	Targeted Vegetation	Cell
September 2, 2016	Flumioxazin	6	2	12	Water lettuce	2
September 26, 2016	Flumioxazin	6	23	138	Water lettuce	2
September 26, 2016	Flumioxazin	6	9	54	Water lettuce	1
September 26, 2016	Glyphosate	120	1	120	Alligator weed	1
September 26, 2016	Imazapyr	32	1	32	Alligator weed	1
September 27, 2016	Flumioxazin	6	13	78	Water lettuce	2
January 13, 2017	Flumioxazin	6	8	48	Water lettuce	1

a. Total Applied = Application Rate x Acres Sprayed.

PERMIT MONITORING REQUIREMENTS AND COMPLIANCE

This section summarizes results of monitoring activities conducted during WY2017 and provides an evaluation of compliance with discharge requirements outlined in Specific Conditions 17 and 22 of the permit (0194485-013). All monitoring activities were performed in accordance with Chapter 62-160, F.A.C., and the approved water quality monitoring plan (SFWMD 2016), as required by Specific Condition 22 of the permit. Water quality data for WY2017 are included in Attachment B, and hydrologic data for WY2017 are included in Attachment C. Water quality parameters with Florida Class III standards are identified in **Table 4**.

Table 4. Water quality parameters with Florida Class III surface water criteria specified in Section 62-302.530, F.A.C.

Parameter	Unit ^a	Class III Criteria
Dissolved Oxygen Percent Saturation	%	No more than 10% of daily average percent DO saturation values shall be below 38% in the Everglades Bioregion, or, for instantaneous data, no more than 10% of the percent DO values shall be below the time-of-day specific translation (FDEP 2013).
pH		Not less than 6.0 or greater than 8.5
Specific Conductance	µS/cm	Not greater than 50% above background or greater than 1,275 µS/cm, whichever is greater
Total Ammonia Nitrogen (TAN)	mg/L	30-day average TAN value shall not exceed the average of the values calculated from the FDEP TAN equation, with no single value exceeding 2.5 times the value from the equation.
Turbidity	NTU	Less than or equal to 29 NTU above background conditions

a. µS/cm – microsiemens per centimeter; mg/L – milligrams per liter; and NTU – nephelometric turbidity unit.

TOTAL PHOSPHORUS

According to Specific Condition 17A of the permit, during routine operations the STA is to be operated to maximize P load reductions to the extent practicable, consistent with the design objectives set forth in the *Operation Plan for the Taylor Creek Stormwater Treatment Area* (Goforth, 2005). During WY2017, the STA received 2.33 t of TP from the Taylor Creek drainage basin and retained 1.20 t, for a treatment efficiency of 51% (see **Table 7** in the *STA Performance Evaluation* Section). While the TC-STA fell short of the annual target load reduction of 2.0 t, the P load reduction of 51% far exceeded the design treatment efficiency of 38%.

DISSOLVED OXYGEN

In accordance with Specific Condition 17B of the permit, dissolved oxygen (DO) was monitored at the inflow (S-390), outflow (S-392), and downstream (TCDO) monitoring stations. Percent DO saturation differed among locations for the smallest observation (sample minimum), median, mean, and largest observation (sample maximum) (**Table 5**). The ranges of DO saturation were 10% to 91% at the inflow, 2% to 72% at the outflow, and 31% to 90% at the downstream station (**Table 5**). The mean and median values for percent DO saturation were lowest at the outflow station. The downstream monitoring station had the highest median and mean DO saturation of 65%.

Table 5. DO summary for TC-STA for WY2017.

Station	Number of Observations	Percent DO Saturation					Excursions	Excursion Rate ^a	Status
		Minimum	Median	Mean	Maximum	Standard Deviation			
S-390 (Inflow)	52	10%	61%	58%	91%	16%	NA ^b	NA	NA
S-392 (Outflow)	52	2%	21%	28%	72%	19%	35	67.3%	Exceeds Criterion
TCDO (Downstream)	46	31%	65%	65%	90%	14%	1	2.2%	Meets Criterion

a. To meet the criterion, a station's excursion rate must not exceed 10%. Excursions were determined based on the percent DO saturation calculations provided in Attachment B.

b. NA = Not applicable.

To determine whether the STA contributed to the degradation of DO in the downstream receiving waters, DO concentrations measured at the STA outflow and downstream station were evaluated using the freshwater Class III criterion (Table 4). DO conditions in the TC-STA were assessed using instantaneous DO data. Because DO data were measured as a concentration in milligrams per liter (mg/L), the values were first converted to percent DO saturation based on the temperature measured at the same location. To assess whether the daily criterion was met at the STA outflow and downstream station, each measured DO level at a given time was compared to the calculated time-of-day specific translation for that time. When the measured DO is greater than or equal to the calculated value, the daily DO criterion is achieved (FDEP 2013). As shown in **Table 4**, the Class III criterion is met when the excursion rate for a station does not exceed 10%. The outflow location did not meet the criterion, with a 67.3% excursion rate. The project does not appear to have adversely impacted downstream DO levels, as the downstream monitoring location met the criterion, with an excursion rate of 2.2%, and the downstream DO mean and median levels were higher than upstream at the project inflow site, S-390 (**Table 5**).

The reduction in DO levels from inflow to outflow can be attributed to a combination of factors: (1) the highly colored water and heavy shading provided by cypress trees at the southern portion of the STA could be limiting light penetration, which reduces photosynthetic DO production; (2) decomposition of dead biomass, from periodic spraying to control water lettuce and other undesirable plant species, could result in elevated natural biological oxygen demand that depletes oxygen in the water (the limited photosynthetic activity and high oxygen demand in many Florida freshwater systems result in naturally low DO levels, with values typically ranging down to 3.0 mg/L or less [FDEP 2013]); and (3) exceedances are fairly common in macrophyte-dominated wetlands where photosynthesis and respiration result in wide diel swings in DO levels (Ivanoff et al. 2013).

OTHER WATER QUALITY PARAMETERS

Water quality monitoring was also conducted for parameters other than TP and DO, and results are summarized in **Table 6**. Compliance was evaluated in accordance with Specific Condition 17C of the permit. Water quality parameters with Florida Class III criteria are identified in **Table 4**. The mean pH value (calculated from the negative logarithm of the hydrogen ion concentration) at the outflow was 6.9, which was within the Class III pH limits (6.0 to 8.5). Mean pH was 7.1 at the inflow. Average specific conductance at the outflow was 507 microsiemens per centimeter ($\mu\text{S}/\text{cm}$), which was below the Class III limit ($\leq 1,275 \mu\text{S}/\text{cm}$). Average specific conductance at the inflow (514 $\mu\text{S}/\text{cm}$) was slightly higher than at the outflow. Total ammonia nitrogen (TAN) levels averaged 0.261 mg/L at the inflow and 0.146 mg/L at the outflow. The number of TAN samples collected per month was insufficient to accurately determine compliance, therefore compliance was based on the not-to-exceed single sample criteria. All individual TAN values were below the not-to-exceed criteria. Sulfate levels at the inflow and outflow stations averaged 56.0 and 55.6 mg/L, respectively. Orthophosphate concentrations decreased from 0.286 mg/L at the inflow to 0.266 mg/L at the outflow. Total nitrogen averaged 1.66 and 1.37 mg/L at the inflow and outflow, respectively. None of the water quality parameters with Class III standards caused or contributed to an excursion in terms of average outflow concentrations.

Table 6. Summary of other water quality parameters measured at the TC-STA during WY2017.
(Note: For outflow station S-392, table includes the number of excursions for parameters with Florida Class III surface water criteria, Section 62-302.530, F.A.C.)

Parameter ^a	Number of Observations	Mean ^b	Standard Deviation	Minimum	Percentiles			Maximum	Excursions
					25 th	50 th	75 th		
Inflow (S-390)									
Orthophosphate as P (mg/L)	26	0.286	0.213	0.034	0.127	0.215	0.365	0.740	NA ^c
pH	52	7.1	NA	6.4	7.0	7.2	7.5	8.3	NA
Specific Conductance (μS/cm)	52	514	150	167	460	564	618	723	NA
Sulfate (mg/L)	26	56.0	29.9	7.8	31.6	62.5	77.5	102.0	NA
Temperature (degrees Celsius [°C])	52	24.5	4.0	13.5	21.7	24.2	27.9	30.8	NA
Total Ammonia Nitrogen (mg/L)	26	0.261	0.630	0.015	0.028	0.065	0.169	3.169	NA
Total Nitrogen (mg/L)	26	1.658	0.941	0.866	1.090	1.320	2.045	5.430	NA
Outflow (S-392)									
Orthophosphate as P (mg/L)	26	0.266	0.108	0.114	0.191	0.254	0.310	0.569	NA
pH	52	6.9	NA	6.0	6.8	7.2	7.8	8.3	0
Specific Conductance (μS/cm)	52	507	165	236	336	514	635	786	0
Sulfate (mg/L)	26	55.6	29.4	13.0	27.9	55.6	88.8	98.1	NA
Temperature (°C)	52	24.1	3.6	15.6	21.0	24.2	27.3	30.1	NA
Total Ammonia Nitrogen (mg/L)	26	0.146	0.097	0.029	0.073	0.108	0.243	0.359	0
Total Nitrogen (mg/L)	26	1.369	0.201	0.959	1.233	1.365	1.453	1.810	NA

a. Measured on either weekly or biweekly basis; collected as grab samples.

b. Arithmetic mean. Mean pH was calculated from the negative logarithm of the hydrogen ion concentration.

c. NA = not applicable.

MERCURY

On May 23, 2016, FDEP approved moving TC-STA mercury monitoring from Phase 3 – Tier 1: Routine Operational Monitoring from Year 4 to Year 9 to Phase 3 – Tier 3: Routine Operational Monitoring After Year 9 (FDEP and SFWMD 2011). Because of this change, project-specific monitoring has been discontinued, no mercury samples were collected during the reporting period, and any future assessments will be based on regional monitoring.

STA PERFORMANCE EVALUATION

This section summarizes TC-STA performance for the current reporting period and provides a comparison with the performance of previous years, as required in Specific Condition 34D of the permit. Flow-through operations at the TC-STA commenced on June 26, 2008. By the end of WY2017, the TC-STA had 78.5 months of flow-through:

- WY2009: 8 months of flow-through (June 26, 2008–February 24, 2009).
- WY2010: No flow-through. The TC-STA was offline the entire water year (May 1, 2009–April 20, 2010) while construction repairs to the failed culvert at the outflow structure were being completed.
- WY2011: Approximately 8 months of flow-through (September 8, 2010–April 30, 2011).
- WY2012: 12 months of flow-through (May 1, 2011–April 30, 2012).
- WY2013: 9 months of flow-through (May 1, 2012–January 31, 2013). Operational interruptions resulted from implementation of drawdown activities.
- WY2014: 9 months of flow-through (July 30, 2013–April 30, 2014). The TC-STA was offline during the first quarter of WY2014 due to a drawdown to enhance vegetation conditions in the STA.
- WY2015: Over 10 months of flow-through (May 1, 2014–April 30, 2015). Pumping operation was suspended from May 8 to June 26, 2014, due to drawdown activities.
- WY2016: 12 months of flow-through (May 1, 2015–April 30, 2016).
- WY2017: 10.5 months of flow-through (May 1, 2016–March 14, 2017).

During WY2017, the STA treated 5,266 acre-feet (ac-ft) of runoff water from the Taylor Creek drainage basin (**Table 7**). The volume of treated water discharged back into Taylor Creek was 3,037 ac-ft. The difference in total inflow and outflow volumes is due largely to storage, seepage, and evapotranspiration losses. HRT, the average length of time the runoff remained within the STA, was 20.7 days, which is longer than any previous HRT. The increase in HRT was primarily due to operational changes (e.g., reduced hydraulic loading rate) made in response to declining STA performance under decreasing flow and inflow TP concentrations. Flow-weighted mean (FWM) TP concentrations measured at the inflow and outflow points of the STA averaged 358 and 302 µg/L, respectively, for a TP concentration reduction of 16% (**Table 7**). The TP loading rate for WY2017 was 4.77 grams per square meter per year (g/m²/yr), which is lower than the previous year's TP loading rate and is a result of the reduced hydraulic and TP mass loading. A total of 2.33 t of TP was loaded into the STA in WY2017, of which 1.20 t was retained within the STA, for a TP load reduction of 51.4%. The difference between inflow and outflow TP loads was significantly different using a paired t-test at the 5% level of significance (t-statistic = 2.384, p-value = 0.0308).

Although the STA did not meet the predicted load reduction of 2.0 t/yr, based on historical flows and phosphorus concentrations from Taylor Creek available during the design phase (Goforth 2005), the phosphorus load reduction for WY2017 (51%) exceeded the predicted reduction efficiency of 38%.

The permit and operation plan recognize that STA performance could vary based on field conditions and operation of the STA. Total inflow volumes and flow-weighted mean TP concentrations have generally been lower than those used during the design phase, affecting the net TP mass removed by the STA. Therefore, while up to 2.0 t/y of P removal by the STA was predicted with inflows and concentrations identified in the performance plan, actual conditions, particularly over the last 5 years of flow-through operations, reflect (**Table 7**) lower total inflow volumes and lower inflow P concentrations. This has resulted in limited P loads into the STA, averaging 1.1 t/y of P removed during WY2009–WY2017. By the end of WY2017, the TC-STA had removed 8.90 t of TP over 78.5 months of flow-through operation, for an overall P treatment efficiency of over 36%.

Table 7. Summary of calculated operational parameters and performance data for the TC-STA by water year. (Note: TC-STA was offline during WY2010.)

Parameter	WY2009	WY2011	WY2012	WY2013	WY2014	WY2015	WY2016	WY2017
Period of operation (days)	244	235	366	276	275	315	366	318
Total inflow volume (ac-ft)	9,218	6,988	13,118	5,810	4,863	6,416	7,219	5,266
Hydraulic loading rate (centimeters per day)	10.04	7.70	9.26	5.44	4.41	5.00	5.10	4.28
Inflow FWM TP concentration (µg/L)	408	167	341	368	271	264	373	358
Total inflow load (t)	4.64	1.44	5.51	2.63	1.62	2.09	3.32	2.33
TP mass loading rate (g/m ² /yr) ^a	9.27	3.29	11.35	5.52	3.58	4.41	6.95	4.87
Total outflow volume (ac-ft)	8,768	6,257	12,208	5,762	3,697	4,101	3,866	3,037
Outflow FWM TP concentration (µg/L)	296	68	292	289	218	184	304	302
Total outflow load (t)	3.20	0.52	4.40	2.05	0.99	0.93	1.45	1.13
Hydraulic retention time (days)	6.3	7.8	6.5	9.7	14.0	14.5	19.4	20.7
TP mass removed (t)	1.44	0.91	1.11	0.58	0.63	1.16	1.87	1.20
TP concentration reduction (%)	27.5	59.3	14.4	21.4	19.5	30.3	18.3	15.8
TP load reduction (%)	31.1	63.9	20.2	22.0	38.8	55.4	56.2	51.4

a. Calculated based on the period of operation (days).

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Attachment A: Specific Conditions and Cross-References

Table A-1. Specific conditions, actions taken, and cross-references presented in this report for the Taylor Creek STA (NEEPP permit 0194485-013).

Specific Condition	Description	Applicable Phase	Action Taken	Reported in 2018 SFER Vol. III, App. 4-2 in:			
				Narrative (page #s)	Figure	Table	Attachment
17	Routine Operations	Operations	Water quality monitoring was conducted and evaluated as required.	1, 5		1	B
17A	Phosphorus	Operations	The TC-STA demonstrated a net reduction in TP loads and concentrations from inflow to outflow.	7, 11		7	B
17B	Dissolved Oxygen	Operations	Percent DO saturation at the downstream location met applicable criteria.	7–8		4-5	B
17C	Other Water Quality Parameters	Operations	None of the required water quality parameters with Class III standards contributed to exceedances in terms of average outflow concentrations.	9		6	B
21	Vegetation Conditions	Operations	Focused on the control of undesirable plant species in the STA.	5–6		3	
35	Factors Outside the Permittee's Control	Operations	No action needed.				
22	Water Quality Monitoring	Operations	Monitoring program conducted in accordance with Specific Condition 34 and Table 1 of the permit.	7			B
23	Mercury Monitoring	Operations	Mercury monitoring has been discontinued effective May 23, 2016.	10			
24	Data Quality	Operations	Sampling and analysis were performed per Chapter 62-160, F.A.C., and SFWMD's water quality monitoring plan.	7			B
27	Turbidity Monitoring	Construction/ Maintenance	Not applicable because there was no construction during the reporting period.				

Table A-1. Continued.

Specific Condition	Description	Applicable Phase	Action Taken	Reported in 2018 SFER Vol. III, App. 4-2 in:			
				Narrative (page #s)	Figure	Table	Attachment
28	Removal of Parameters	Operations	Mercury monitoring has been discontinued effective May 23, 2016.	10			
29	Addition of Parameters	Operations	No action needed.				
34	Annual Reports	Operations	Annual report (this document) was prepared and submitted as required.	All	All	All	All
34C	Water Quality Data	Operations	Water quality data were collected in accordance with Chapter 62-160, F.A.C., and the compliance monitoring plan for TC-STA (SFWMD 2016).	7-11		5–7	B, C
34D	Performance Evaluation	Operations	STA performance during WY2017 was evaluated and compared with performance of previous water years.	10-11		7	B, C
34E	Herbicide and Pesticide Tracking	Operations	WY2017 usage was tracked, as required, and is summarized in the report.	6		3	
34F	Implementation Schedules	Operations	No action needed.				
37	Permit Modifications	Operations	No action needed.				
38	Permit Renewal	Operations	The permit was renewed through issuance of modification 0194485-013 on August 1, 2016, with an expiration date of August 1, 2021.	4			
39	Department Review and Approval	Operations	Mutual agreement was reached on remedial actions and plan modifications.				

Attachment B: Water Quality Data

This project information is required by Specific Condition 34C of the Taylor Creek STA permit (0194485-013) and is available upon request.

Attachment C: Hydrologic Data

This project information is required by Specific Conditions 17 and 34C of the Taylor Creek STA permit (0194485-013) and is available upon request.

Table C-1. Total monthly flow at the inflow and outflow points of the TC-STA for WY2017.

Month/Year	Inflow (S-390) (ac-ft)	Outflow (S-392) (ac-ft)
May 2016	637	345
June 2016	611	372
July 2016	664	399
August 2016	623	443
September 2016	614	451
October 2016	599	396
November 2016	459	283
December 2016	317	111
January 2017	315	115
February 2017	291	77
March 2017	135	44
April 2017	0	0
Total	5,266	3,037

Table C-2. Total monthly rainfall (in inches) recorded at station Mobley near TC-STA for WY2017.

Month/Year	Rainfall (inches)
May 2016	6.60
June 2016	9.33
July 2016	2.08
August 2016	8.15
September 2016	10.34
October 2016	3.73
November 2016	0.06
December 2016	0.71
January 2017	0.37
February 2017	0.44
March 2017	1.23
April 2017	0.58
Total	43.62